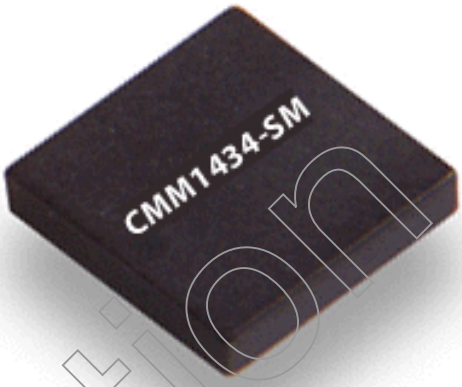
13.50-14.50 GHz
2.5-Watt Power Amplifier

March 2006 - Rev 02-Mar-06

CMM1434-SM

Features

- 34.5 dBm (Typ.) Saturated Output Power
- 31.0 dB (Typ.) Linear Gain
- Fully Matched
- Uncondtionally Stable
- Low-Cost, Surface Mount Package
- Optimum Thermal Dissipation



Applications

- Ku-Band VSAT Transmit Subsystems

General Description

The CMM1434-SM is a four-stage pHEMT GaAs MMIC power amplifier that is ideally suited for transmit subsystems designed for Ku-Band VSAT applications. The CMM1434-SM provides 31.0 dB linear gain and delivers 2.5 watts of output power at saturation operating from 13.50 to 14.50 GHz frequency.

The unconditional stability and internal matching provides for reduction of external components making this product a simple and low-cost solution. The low-cost 6mm x 6mm x 1.6mm surface mount package offers the same excellent RF and thermal properties as a typical flange package.

Electrical Characteristics (T = +25°C, Vd = 6V, Idq = 1.5A)

Parameter	Condition	Min	Typ	Max	Units
Frequency Range		13.50		14.50	GHz
Output Power	@ 1dB compression	31.5	32		dBm
Saturated Output Power	Pin = 10 dBm	33	34.5		dBm
Saturated Output Power Variation	Over operating frequency		0.5	1.0	dBm
Linear Gain		27.0	30.5	34.0	dB
Linear Gain Variation	Over operating frequency		1.0	3.0	dB
Input Reflection Coefficient			-10.0		dB
Output Reflection Coefficient			-7.0		dB
Gate Supply Voltage	Idq = 1.5A	-1.1	-0.9	-0.7	Volts
Drain Current	At Saturation		1.7	1.9	A
Power Added Efficiency	At Saturation		26		%

Electrical Specifications (TA = -40°C to +75°C)

Parameter	Condition	Min	Typ	Max	Units
Saturated Output Power	Variation from Room Temperature	-0.5			dBm
Linear Gain	Variation from Room Temperature	-2.5		3.5	dB
Stability		Unconditionally stable			

Maximum Ratings (TA = -40°C to +75°C)

Operation outside these limits can cause permanent damage.

Parameter	Typ	Units	Parameter	Typ	Units
Drain Voltage ($+V_{dd}$)	8.5	Volts	RF Input Power (P_{in})	15	dBm
Gate Voltage (V_{gg})	-3.0	Volts	Dissipated Power (P_{diss})	13	Watts
Quiescent Current (I_{dq})	2.1	A	Storage Temperature	-50 to +150	°C
Gate Current (I_g)	5	mA	Operating Backside Temperature	-40 to +75	°C

Preproduction

Mimix Broadband, Inc., 10795 Rockley Rd., Houston, Texas 77099
Tel: 281.988.4600 Fax: 281.988.4615 mimixbroadband.com

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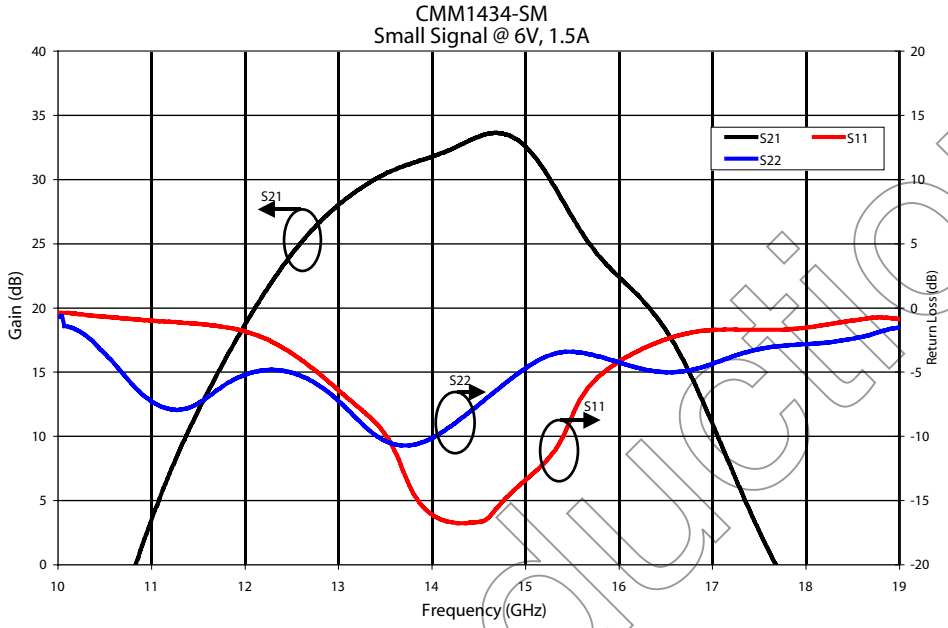
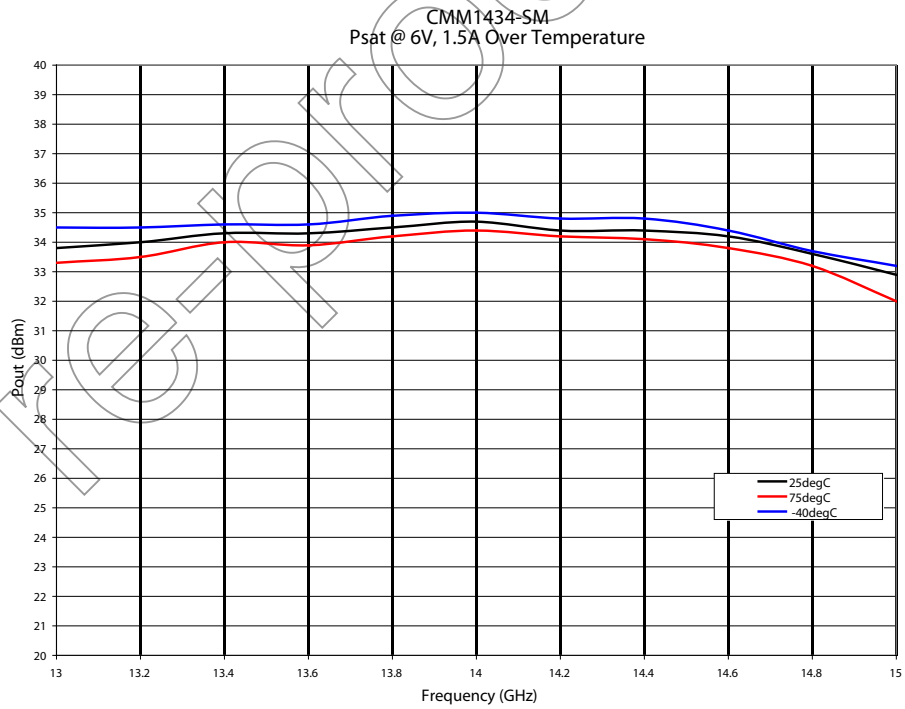
Power Amplifier Measurements





Preproduction

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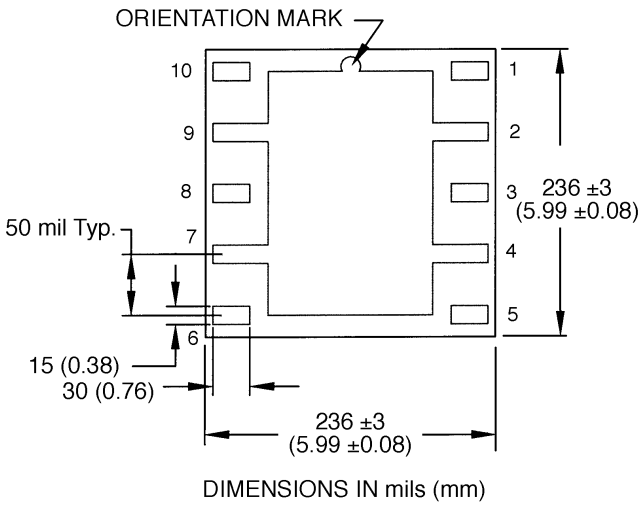
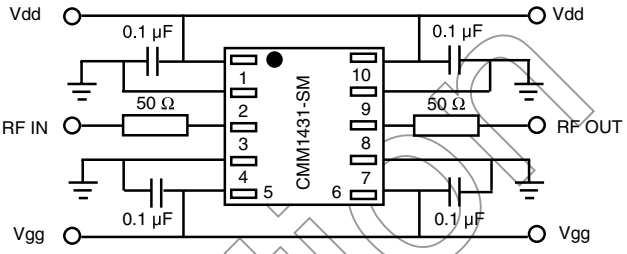
Physical Dimensions (Bottom View)



DIMENSIONS IN mils (mm)

Recommended Application Circuit

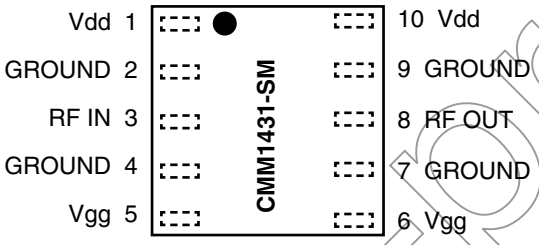
Note: This schematic represents the topology of the application circuit recommended by Celeritek.



Note: Due to the high gain of this device it is highly recommended to maintain the reverse isolation (S12) above 50 dB.

Biasing Notes
1. Dual bias is required
2. 0.1µF bypass capacitors are needed on PC board as close as possible to pins 1, 5, 6 and 10.
3. Positive (+) bias can be applied either at pin 1 or pin 6.
4. Negative (-) bias can be applied either at pin 5 or pin 6.
5. No DC block is required at RF IN/OUT.
6. Negative (-) bias must be applied before applying positive (+) bias.

Pin Functional Diagram



Ordering Information

The CMM1434-SM is available in available in tube or tape and reel.

Part Number for Ordering	Package
CMM1431-SM	Surface mount package
PB-CMM1434-SM	Evaluation Board

Pre-production

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